Title: Cross- Module In-Lining Inventor: Sungo Moon et al. USPTO App. No.: not yet assigned HP PDNO: 200313044-1

1/8

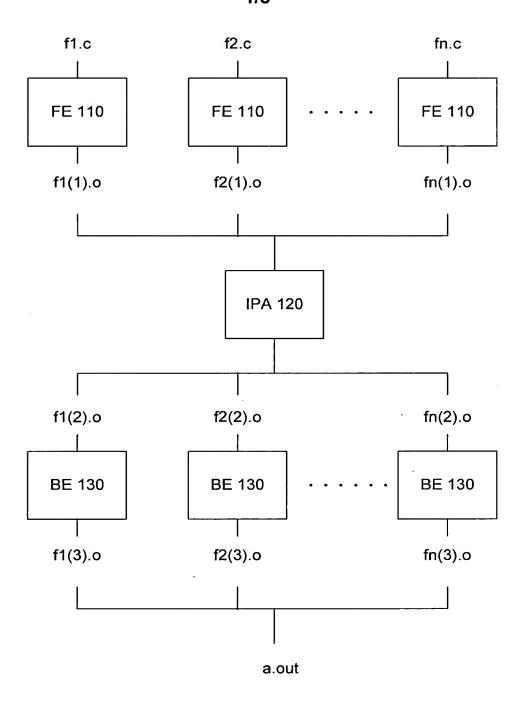


FIG. 1



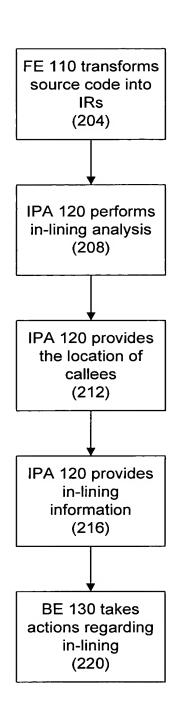


FIG. 2

3/8

```
<u>f1.c</u>
                                                <u>f3.c</u>
                        <u>f2.c</u>
                                                 325 func (){
305 foo (){
                        315 bar (){
                                                                         FIG. 3A
  310 bar()
                          320 func()
f1(1).o
                        f2(1).o
                                                 f3(1).o
                        315 bar (){
305 foo (){
                                                 325 func (){
                                                                         FIG. 3B
                          320 func()
  310 bar()
                                                 f3(2).o
                        f2(2).o
f1(2).o
305 foo (){
                        315 bar (){
                                                 325 func (){
                                                                         FIG. 3C
  310 bar()
                          320 func()
330 bar(){
f1(3).o
                        f2(3).o
                                                 f3(3).o
                        315 bar (){
                                                 325 func (){
305 foo (){
                          being deleted
 310 function
                                                                         FIG. 3D
bar() in-lined herein
330 bar(){
being deleted after
in-lined into
function foo()
```

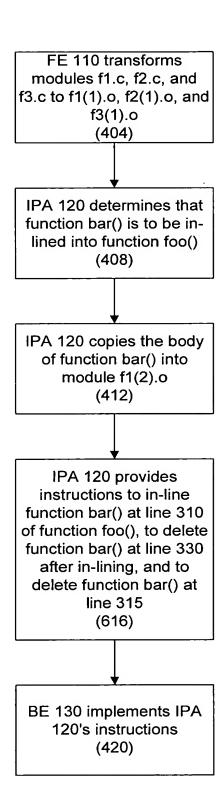


FIG. 4

5/8 ff1.c ff2.c ff3.c 525 ffunc (){ 505 ffoo (){ 515 bbar (){ FIG. 5A 520 ffunc() 510 bbar() ff1(1).o ff2(1).o ff3(1).o 525 ffunc (){ 505 ffoo (){ 515 bbar (){ FIG. 5B 520 ffunc() 510 bbar() ff1(2).o ff2(2).o ff3(2).o 505 ffoo (){ 515 bbar (){ 525 ffunc (){ 510 bbar() FIG. 5C 520 ffunc() 530 bbar(){ 540 ffunc(){ ff2(3).o ff3(3).o ff1(3).0505 ffoo (){ 525 ffunc (){ 515 bbar (){ 510 function FIG. 5D being deleted being deleted bbar() and ffunc() being in-lined herein

530 bbar(){

540 ffunc(){

in-lining

in-lining

being deleted after

being deleted after

FE 110 transforms modules ff1.c, ff2.c, and ff3.c to ff1(1).o, ff2(1).o, and ff3(1).o (604)

IPA 120 determines that function bbar() is to be inlined into function ffoo() and function ffunc() is to be in-lined into function bbar() (608)

IPA 120 copies the body of function bbar() and function ffunc() into module f1(2).o (612)

IPA 120 provides instructions to in-line function bbar() at line 510 of function ffoo(), to delete function bbar() at line 530 after in-lining, and not to provide function bbar() at line 515. The instructions also request to in-line function ffunc() at line 520 of function bbar(), to delete function ffunc() at line 540 after in-lining, and not to provide function ffunc() at line 525. (616)

BE 130 implements IPA 120's instructions (620) 6/8

FIG. 6

Title: Cross- Module In-Lining Inventor: Sungo Moon et al. USPTO App. No.: not yet assigned HP PDNO: 200313044-1

7/8

```
bar(int p) {

if (p==0) {

710
...
720
FIG. 7A
} else {

730
...
740
}
```

```
bar_clone_1(int p) {

if (p==0) {

710

720

740

}

bar_clone_2(int p) {

if (p!=0) {

730

740

}

}
```

FIG. 7B

FIG. 7C

8/8

